ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF AIR

October 2003

Responsiveness Summary
for Public Questions and Comments on the Construction Permit Application from
3426 E. 89th Street, LLC

Site Identification No.: 031600GNK
Application No.: 02120052

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INTRODUCTION:

3426 E. 89th Street, LLC (89th Street) has applied for an air pollution control construction permit for an electric power plant. The plant would have a nominal electrical output of about 550 megawatts. The proposed plant would be located at the former USX site on a parcel of property adjacent to Lake Michigan in Chicago. The proposed project is considered a major source of air emissions and is subject to the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21.

Upon review of comments received during the public comment period and final review of the application, the Illinois EPA has determined that the application meets the standards for issuance of a construction permit. Accordingly, on October 31, 2003, the Illinois Environmental Protection Agency (Illinois EPA) issued 89th Street a permit to construct the proposed facility. The plant must be constructed and operated in accordance with applicable regulations and the conditions of the permit.

DESCRIPTION OF PROPOSED PROJECT:

The proposed plant would have two combustion turbines equipped with supplementary-fired heat recovery steam generators (HRSG). Each turbine would be equipped with dry low NOx combustors and an add-on selective catalytic reduction (SCR) system in the HRSG to reduce emissions of NOx. Each turbine would also be equipped with an oxidation catalyst system in the HRSG to reduce emissions of CO. The turbine and duct burners would only be fired with natural gas. The plant would also include auxiliary boilers, cooling towers, and other ancillary operations.

COMMENT PERIOD AND PUBLIC HEARING:

The Illinois EPA Bureau of Air evaluates applications and issues permits for sources of emissions to the atmosphere. An air permit application must appropriately address compliance with applicable air pollution control laws and regulations before a permit can be issued. Following its initial technical review of 89th Street's application, the Illinois EPA, Bureau of Air made a preliminary determination that the application met the standards for issuance of a construction permit and prepared a draft permit for public review and comment.

The public comment period began on May 4, 2003, with the publication of a notice in the Daily Southtown. Notices were also published in this paper on May 11 and May 18, 2003. A public hearing was held on June 18, 2003, at the Chicago Public Library, South Branch to receive oral comments and answer questions regarding the application and draft air permit. The comment period remained open until July 18, 2003, to receive written comments.

AVAILABILITY OF DOCUMENTS:

The permit issued to 89th Street and this responsiveness summary are available on the Illinois Permit Database at www.epa.gov/region5/air/permits/ilonline.htm (please look for the documents under All Permit Records, PSD, New). Copies of these documents may also be obtained by contacting the Illinois EPA at the telephone numbers listed at the end of this document.

APPEAL PROVISIONS:

The permit being issued for the proposed plant grants approval to construct pursuant to the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. Accordingly, individuals who filed comments on the draft permit or participated in the public hearing may petition the U.S. Environmental Protection Agency (USEPA) to review the PSD provisions of the issued permit. In addition, as comments were submitted on the draft permit for the proposed facility that requested a change in the draft permit, the issued permit does not become effective until after the period for filing of an appeal has passed. The procedures governing appeals are contained in the Code of Federal Regulations (CFR), "Appeal of RCRA, UIC and PSD permits," 40 CFR 124.19. If an appeal request will be submitted to USEPA by a means other than regular mail, refer to the Environmental Appeals Board website at www.epa.gov/eab/eabfaq.htm#3 for instructions. If an appeal request will be filed by regular mail, it should be sent on a timely basis to the following address:

U.S. Environmental Protection Agency
Clerk of the Board, Environmental Appeals Board
MC 11038B
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460-0001
Telephone: 202/233-0122

QUESTIONS AND COMMENTS:

The following is the Illinois EPA's detailed response to significant questions and comments submitted during the public comment period. Individual comments have been consolidated where a common concern was expressed and a single response could be provided.

GENERAL:

1. How will the proposed combustion turbines make electricity?

   Response: A combustion turbine is a rotary engine in which fuel is continuously burned with the force of the hot combustion gases as they expand pushing on a series of blades to rotate a shaft. When used in a power plant, the power shaft is connected to an electrical generator.

   The two combustion turbines proposed by 89th Street will be used in a combined cycle configuration. In a combined cycle configuration the hot exhaust gases discharged from the combustion turbines do not go directly to the atmosphere but instead are ducted through a "heat recovery steam generator" and used to make steam. This steam is then used to drive a steam turbine generator, to produce more electricity. The recovery of heat energy from the exhaust of the combustion turbine increases the overall output of the unit by about 50 percent compared to the combustion turbine by itself. The output of the overall system can be further increased, as is occurring at the proposed plant, by installing so called "duct-burners" in the duct between the turbine and the heat recovery steam generator (HRSG). The

duct burner is turned on when additional power is needed that the turbine and HRSG cannot provide by themselves.

2. At the hearing, no mention was made of the height of the stacks on the turbines or which way the prevailing winds will send the plume of air emissions during the course of a year. Will the emissions blow to the northwest from the plant, since that is the direction we live from the proposed site?

   Response: The stacks of the turbines are 160 feet tall. However, because of the speed of the exhaust and its thermal buoyancy, the effective height of the stacks for purposes of dispersion is higher. During the course of a year, winds come from all points of the compass, so that at times winds blow to the northwest.

   What is more informative is the predicted air quality impacts of the proposed plant as a consequence of both the height of the stacks and their exhaust characteristic and the wind patterns in the area. As stated at the hearing, the analysis performed for the plant shows that the additional loading of pollutants in the air would not be significant and would not threaten compliance with the current ambient air quality standards for particulate matter (PM10), sulfur dioxide (SO_2), nitrogen oxide (NOx) and carbon monoxide (CO). The reactive nature of ozone is such that the emissions of the plant will not have an affect on local air quality for ozone.

PROPOSED CONTROL TECHNOLOGY FOR NITROGEN OXIDES (NOx):

3. The project summary and draft permit prepared by the Illinois EPA say that the plant has to use Best Available Control Technology, which has been determined to be using dry-low NOx (DLN) technology for the turbines and selective catalytic reduction (SCR) systems for the heat recovery steam generators (HRSG). However, we were not told in these documents or at the hearing anything about these technologies. In particular, what is the rate of success and effectiveness of these technologies in achieving the claimed reduction in emissions, on other plants in the US of similar size (550MW) and configuration? Has the Illinois EPA reviewed the track records for these DLN and SCR technologies, showing how often they fail to maintain guaranteed emission levels or go out of service?

   Response: These techniques are being successfully used at several other new plants in Illinois. SCR Systems are now routinely designed and operated to achieve nominal control efficiency of 90% as at the proposed plant.

4. General Electric (GE) has been promoting a DLN-2 technology at trade shows this year. Since this is an improvements over DLN-1 and the permit requires use of Best Available Control Technology (BACT), we request that the permit require use of the very latest improvements on DLN and SCR technologies on this plant, such as GE's DLN-2 technology, or similar most recent advances by other vendors.

   Response: The emission limit set as BACT for NOx, 2.5 ppm, is a stringent limit that is consistent with the NOx limits set for similar new plants. It will require use of Siemens Westinghouse's advanced DLN technology and a modern SCR system. It is not appropriate for the Illinois EPA to extend this determination to specify that a particular version of DLN or SCR be applied.

Moreover, GE's DLN-2 is not an advance over DLN-1. DLN-1 is GE's version of DLN technology for a line of small GE turbines. DLN-2 is GE's DLN technology for a line of larger GE turbines.

5. According to GE's latest NOx control equipment literature, managing steady NOx levels over widely ranging ambient conditions requires a very complex operating system. The permit should require that the BACT include the latest and best operating systems for this purpose.

   Response: The operating system for a turbine and its burners are inherent component of the turbine. It is not practical or desirable to require that an operating system different than the one provided by the manufacturer by used on a turbine.

   In addition, the statements by GE most likely relate to its DLN technology, which is capable of achieving 9 ppm NOx. The Siemens Westinghouse turbines planned to be used at this plant do not by themselves achieve 9 ppm NOx. However, as previously stated, the combination of DLN and SCR is required to meet a BACT limit of 2.5 ppm NOx on a 24-hour average.

6. Siemens Westinghouse has published certain information regarding combustion turbine degradation. One major factor they list for degradation is high levels of airborne particulate matter having adverse effects on compressor flow and efficiency. The proposed site has high levels of particulate matter, based on over 100 years of use as a steel mill. The Illinois EPA should require the applicant to explain the effects of turbine degradation on multiyear upward trends in emissions. Has the applicant seen the manufacturer's degradation curves for the proposed turbines? The permit should require that adequate technologies be used to control intake of particulate matter into the turbines.

   Response: The permit does not allow there to be upward trends in emissions performance year after year. That is, the Permittee must take such steps and carry out such maintenance as are needed to comply with applicable limits on a continuing basis.

   At the same time, modern turbines are routinely equipped with inlet air filters to prevent ambient dust from being introduced into the turbines. This is done at both urban plants, like the proposed plant, and at rural plant to protect and preserve the turbines, which cost millions of dollars. Given these circumstances, and the fact that any degradation of the compressor section of turbine acts to reduce the maximum operating level of the turbine, the permit need not include provisions to address the particulate matter in the air intake to the proposed turbines.

AIR QUALITY IMPACTS:

7. It is disturbing that the maximum modeled annual NOx level (0.91 microgram per cubic meter or ug/m3) is very close to the Significant Impact Level of 1.0 ug/m3. The margin (0.09 ug/m3) is just too small for us to be comfortable that the modeling wasn't "pushed" a bit to just get under the Significant Impact Level. Has the Illinois EPA rigorously examined the applicant's modeling assumptions? We fear that it is possible that a few overly generous modeling assumptions, which are not realistic assumptions based on common utility operator practices and the site's ambient

conditions, could have been "tweaked" in order to bring the maximum concentration of NOx to just below the Significant Impact Level. When corrected for standard testing error tolerances under the applicable equipment codes and standards, isn't it possible that this plant will produce annual NOx levels over the Significant Impact Level? We are not comfortable with this and feel strongly that the Illinois EPA should go back and review their analysis and require design changes to plant emissions control design, recognizing that the current plant proposal has a very good probability of exceeding the Significant Impact Level.

Response: The modeling analysis was conducted in accordance with USEPA guidance and more than adequately demonstrates that the proposed plant will not have a significant impact on NOx air quality. No further measures are warranted at the proposed plant to further control emissions relative to impact on NOx air quality.

In addition to the conservative nature of dispersion modeling (dispersion models generally predict high), the modeling of the proposed plant is conservative because it assumes that the emission units at plant will operate at their maximum permitted emission rates and evaluates the resulting impacts in terms of the maximum impact. On an annual basis, as is relevant for NOx, actual emissions of the proposed plant will typically be far less than the permitted levels. This is because the plant will not operate at the maximum level of utilization and will operate with a compliance margin, with hourly emissions below the permitted rate. Similarly the maximum impacts that are reported from the modeling overstate the impacts of the proposed plant as a general matter. In particular, for NOx, the maximum impact occurs near the fence line of the project. These impacts are attributable to the auxiliary boilers, which have shorter stacks than the turbines. Further away from the proposed plant, NOx impacts would be less.

It is also important to understand that the significant air quality impact level under PSD does not define a level at which the concentration of a pollutant in the air has significant effects on human health. Instead, it defines a level at which a more extensive air quality analysis must be performed. That is, if a project's impact is below the significance level, it is so small that air quality will be essentially unchanged and no further analysis is required. If the impact is significant, a more detailed analysis must be performed, with modeling also performed for other large sources in the area. This detailed analysis would review the overall concentrations in the air projected with the project to confirm that the National Ambient Air Quality Standards would not be exceeded. Thus modeling showing significant air quality impacts from a proposed plant does not lead to additional emission controls, only to more modeling.

In the case of NOx, the National Ambient Air Quality Standards is 100 ug/m^3, as nitrogen dioxide (NO_2). Thus, a maximum impact that is less than 1.0 ug/m^3, i.e., one percent of the standard, should not have a noticeable effect on local air quality. In Illinois, the monitoring station located to measure the highest NO_2 levels in the state, at the foot of the Sears Tower in downtown Chicago, only measures about 60 ug/m^3. A maximum modeled NOx impact from a proposed project that is on the order of 1.0 ug/m^3, as present with the proposed project, does not threaten ambient air quality for NOx.

8. Do the maximum-modeled emissions in the application take into account excess emissions emitted during the average annual operating hours during which the DLN or SCR would be malfunctioning or out of service, based on the service records of these types of equipment at other similar plants in the United States? The failure and outage rates should be taken into account in analyzing the applicant's emissions modeling.

   Response: No. The modeling does not account for average annual excess emissions because the permit does not provide a specific allowance for additional NOx emissions from malfunctions. Moreover, any such evaluation would only address the SCR, as turbines cannot operate without the burners and turbines do not operate effectively and are shutdown when burners malfunction. While a turbine can physically operate during a malfunction or breakdown of its SCR, the permit sets up requirements to minimize emissions and repair the affected system or remove the turbine as soon as practicable from service to cease excess emissions [Condition 3(c)]. SCR equipped turbines in Illinois over the last few years has shown that SCR systems are reliable, as malfunctions and breakdowns of the systems have not occurred.

9. The Illinois EPA should make sure that the applicant's maximum modeled annual NOx levels take into account the additional emissions during a reasonably expected annual number of startups and shutdowns, and expected annual transient conditions, based on the fleet history for turbines.

   Response: The NOx modeling adequately addresses these emissions. This is because startups and shutdowns would only have a meaningful contribution to NOx emissions as the turbines are operated less than 13,000 turbine-hours per year. The reduced operating hours, when there would be no NOx emissions, will cover the additional NOx emissions that may accompany startup and shutdown.

   In addition, as the turbines are equipped with continuous emission monitors for NOx, all emissions from the turbines, including emissions during startup and shutdown are accounted for. This will ensure that actual emissions of the turbines not exceed annual emissions of 107 tons, as addressed by the NOx modeling.

10. The Illinois EPA should require that the applicant's modeling take into account the effects of the extreme swings in ambient air temperature and humidity at the proposed site, throughout the year, on the projected maximum NOx air quality impacts.

    Response: The dispersion modeling was conducted using actual weather data for the Chicago area, so that the variability in Chicago weather was addressed.

11. Natural gas prices are currently high, so Illinois EPA should require the applicant to model all reasonably expected possible load factors and operating levels. If power demand is less than expected, could emissions be higher when operating the plant at less than full load? Has this been adequately and conservatively (i.e., assuming a slowly rising demand curve) factored into the emissions analysis?

    Response: This comment assumes that high cost of natural gas would result in operation of the proposed plant at low load levels, which would be accompanied by

emission rates for certain pollutants that are higher than the emission rates at full load. However, turbines have consistent levels of emissions across their normal range of operating load, for these turbines from about 60 to 100 percent load. The duct burners present in each turbine system effectively increase overall output of the system by about 20 percent, increasing the normal operating range from 60 to 120 percent. The maximum emissions across this range of operation were addressed by the modeling.

Given the reduced energy efficiency of turbines at loads outside the normal range, it is unreasonable to expect the turbines to routinely operate outside the normal range. As the cost of natural gas increases, its even less likely that a turbine will be operated outside the normal range. However, permit condition has been added restricting the operation of turbines below 65 percent load or such lower load at which compliance with emission limits has been demonstrated, after shakedown period and testing is completed. [See Condition 9(c)]

PROPOSED LIMITATIONS FOR EMISSIONS OF PARTICULATE MATTER:

12. The proposed plant would be in the Southeast Chicago nonattainment area for PM10 so that if the plant has potential PM10 emissions of 100 tons per year (tpy) or more, the plant would be classified as a major source. We believe the plant has the potential to emit more than 100 tpy of PM10 so that it is a major source. As is required for new major sources located in nonattainment areas, the plant must comply with the Lowest Achievable Emission Rate (LAER) for PM10 pursuant to 35 IAC 203.301.

    Response: The permit that has been issued for the proposed plant would restrict the operation and emissions of the plant so that is not a major source. This is legally necessary because E 89th Street has not submitted an application that would allow the plant to operate as a major source of PM10. For example, the application does not include a demonstration that the plant could comply with the Lowest Achievable Emission Rate (LAER) for PM10. In response to comments, additional provisions have been included in the issued permit to ensure that the plant is not a major source for PM10.

    At this same time, it should be recognized that if E 89th Street had submitted a “major application”, it is likely that the permitted PM10 emission rates would not be significantly different than the emission rates for which it is now being permitted. This is because add-on control devices are not used on combustion turbines for the purpose of controlling PM10 emissions. Rather PM10 emissions are very effectively minimized by the selection of fuel and the efficient combustion achieved by modern gas turbines.

    Finally, although the area in which the plant would be built is still a designated PM10 nonattainment area, ambient monitoring shows that the southeast Chicago area is complying with the PM10 ambient air quality standard. For example, in 2002, the highest daily PM concentration recorded at the PM10 monitor at Washington High School on East 114th Street was 94 micrograms/meter^3 (ug/m^3) compared to the standard of 150 ug/m^3. This improvement in air quality is a result of reductions in PM10 emissions in the area required by tighter PM10 emission standards for existing sources, as well as from the shutdown of sources.

13. The draft permit would be legally inadequate because it would permit the plant as a minor source of PM10. Finding 3(b) of the draft permit states that PM10 emissions are limited to less than 100 tpy, and therefore, the plant would not be a major source. One problem with this is that the draft permit is using a legally inadequate standard. The legal standard that E. 89th Street must meet is one of potential emissions. Allowable emissions are calculated based on the allowable emission rate of a source at its maximum rated capacity. 35 IAC 203.107. The allowable emissions are not based upon the emissions that a permit allows a plant.

    Response: In fact, allowable emissions can be based on an emission limit set by a permit if the permit is federally enforceable. This is the case for this permit. [Refer to 35 IAC 203.107(a)(3).]

14. E. 89th Street is applying the wrong legal standard. In the explanatory note before Table 3-14 of its application, E. 89th Street states, "The CTG [combustion turbine generator] w/ duct firing, is the only emission unit with the potential to emit more than 99 tons/year." Here E. 89th Street is trying to create a distinction between the emissions of the turbines with duct firing, and the rest of the plant. The Illinois EPA, by allowing the applicant to make this distinction, is also applying the wrong legal standard, in an area that is a PM10 nonattainment area. The source as a whole, not just each individual emission unit, is taken into consideration when determining the potential emissions of a source. (See also 35 IAC 203.112.) Incidentally, following the request to classify the turbines separately from the rest of the plant for PM10, E. 89th St. asks that the entire plant, turbines and all, be added together for the PM10 limit.

    Response: This comment places undue emphasis on this explanatory note accompanying the presentation of certain emission data for the source. In fact, the application does address the source as a whole and does not request that potential PM10 emissions be determined only from the emission of turbines. More importantly, when reviewing the source's emissions of PM10 and other pollutants, the Illinois EPA has addressed the source as a whole.

15. If the correct emission calculation is used, when the plant as a whole is taken into consideration, the plant is a major source of PM10. The draft permit only allows the plant to run for 12,500 hours per year as long as each turbine emits no more than 14.79 pounds per hour (lbs/hr) of PM10 [Conditions 9(b)(i)(A)]. However, this will still allow the plant to emit 102.985 tpy of PM10 (Turbines: 92.438, Duct Burners: 3.313, Aux. Boilers: 1.629, Emergency Generators: 0.350, and Cooling Towers: 5.256, Total: 102.985).

    Response: The summation of PM10 emissions in this comment is erroneous. In particular, the permitted emissions of the cooling tower are 1.2 tpy, not 5.3 tpy as relied upon in the comment. (The maximum hourly PM10 emission rate from the cooling tower is 0.27 lb/hr and not 1.2 lb/hr.) Accordingly, this comment overstates the permitted or potential PM10 emissions of the plant by 4 tpy.

16. A discrepancy exists between the PM10 emission rate in Table 3-14 of the application, 14.79 lb/hr and in the form for Air Pollution Control Equipment Data and

Information, 15.85 lbs/hr. The discrepancy is substantial. The higher emission rate, 15.85 lb/hr, makes the plant a major stationary source of PM10 emissions.

Response: Closer examination explains this superficial discrepancy. The PM10 emission rate, 15.85 lb/hr, listed in the control equipment form includes emissions of 1.06 lb/hr attributable to the duct burners and 14.79 lb/hr from the turbine, totaling 15.85 lb/hr. Thus, the potential PM10 emissions of the turbines should only be calculated based on the rate of 15.85 lb/hr if the duct burners could be used whenever a turbine operates. However, this is not the case, i.e., the permit only allows the duct burners to be used for 6,500 hours per year, combined for both CT/HRSG system.

17. Another problem with the approach taken to PM10 emissions in the draft permit is that the plant actually has the potential to emit more than 100 tpy of PM10. An analysis of the information in the application shows that the maximum potential emission from the plant at the number of hours given in the application forms is more than 100 tpy. The permit application for the gas turbines, states that typical operating hours would be 8320 per year (16 hrs/day x 5 days/wk x 52 wks/yr x 2 turbines), significantly lower than the 12,500 that would be allowed by the draft permit. However, the maximum PM emissions, according to the air pollution control equipment form, are 49.80 tpy per turbine. When this is added to requested startup emissions of 0.74 tpy and 0.816 tpy from each auxiliary boiler (from the Fuel Combustion Emission Unit form) the result is emissions of 102.71 tpy. This is without the emergency generator, which is permitted for 0.349 tpy (from Stationary Internal Combustion Engine Or Turbine form) and also without including the Request to Continue to Operate During Malfunction or Breakdown, which adds another 0.74 tpy. The total PM10 emission based on these application forms is 103.803 tpy, not including emissions from the cooling tower.

    Response: This comment places undue emphasis on the hours of operation presented in the application and confuses typical, maximum and permitted operating hours and emissions. (This confusion is certainly understandable given the variety of data provided in the application on operating hours of different units and maximum emission rates for the turbines under different ambient temperature and load conditions.) Typical operating hours are a statement by the source of the hours that a unit is expected to operate; the maximum hours are the greatest hours that the source would ever operate or that the source would like to be permitted for. The permitted hours are the operating hours actually allowed by a permit.

    In this case, the permitted operating hours are lower than the maximum hours requested in the application forms. This is because the Illinois EPA determined that the plant could not be permitted as a non-major source as generally described and addressed in the application if the turbines were allowed to operate at the maximum hours requested and projected maximum hourly PM10 emission rates.

18. As identified in other comments (Comments 15, 16, and 17), every one of these ways of measuring the plant's emissions of PM10, the emissions are over 100 tpy. Therefore, E. 89th Street is actually asking to build a major source. Because of this, the plant must meet LAER requirements. If the Illinois EPA issues a permit that fails to require LAER, as proposed, this would violate 35 IAC 203.301 and would be subject to citizen enforcement.

Response: As explained above in the responses to these other comments, the permit is based on correct evaluation of the plant's PM/PM10 emission. Moreover, the permit must limit the PM10 emissions to less than 100 tons per year so that the plant does not violate 35 IAC 203.301.

19. Because Chicago's temperature varies greatly, from very hot to very cold, Illinois EPA should require a month-by-month analysis of emissions because temperature plays a big part in emissions of turbines. E. 89th Street has only paid lip service to this variable. The average temperature in Chicago is 49° F, and their figures do reflect this. However, temperature has a significant enough effect on the emissions of a turbine, that even 10° F of difference, to 59° F, changes the emission of PM10 from 15.85 up to 16.7 lbs/hr according to the Siemens Westinghouse turbine data sheets that were included with the application. At -5° F that turbine would produce 18.4 lbs/hr. Because the emissions are so temperature sensitive, a month-by-month analysis would be a far more accurate predictor of emissions than a simple average for 49° F, which, while easy, is not accurate.

    Response: This comment correctly observes that one of the challenges for permitting of gas turbines is that the design load at which a turbine can be operated and the resulting emissions from the turbine are related to ambient temperature. However, temperature and design load/emissions are inversely related. That is, during warm weather, when this plant and its turbines would more likely operate, the design load and emissions of the turbines would be less than during cold weather, when the plant would be much less likely to operate.

    As noted in this comment, E. 89th Street did provide information to address the emissions of the turbines at different ambient temperatures. However, the Siemens Westinghouse data cannot be relied upon in the manner suggested by this comment. This is because the Siemens Westinghouse data is for uncontrolled turbine that is not equipped with a CO catalyst system. As such, the data does not account for the incidental reduction in condensable PM10 emissions due to the CO catalyst, which 89th Street estimates to be 25 percent reduction.

PROPOSED LIMITATIONS FOR EMISSIONS OF VOM:

20. The proposed plant is in a nonattainment area for ozone, which is classified as "severe-17" and has five more years in which to come into attainment. VOM emissions contribute to ozone and sources that emit more than 25 tons per year (tpy) of VOM are classified as major stationary sources. More generally, the allowable VOM emissions of a proposed plant should be stringently established.

    The proposed limit on VOM emissions of 24 tpy appears artificially high. E. 89th Street states in Table 3-24 of its application that the potential VOM emissions from the plant are 18.21 tpy. The proposal requests a plant-wide limit of 24 tons, without stating why. There is a gap of about 6 tpy between the plant's potential to emit and the limit asked for by E. 89th Street.

    The draft permit would allow higher emissions than the maximum estimated emissions. The Illinois EPA seems to have merely rubberstamped E. 89th Street's

proposal. Illinois EPA does not have a legal basis to issue a permit allowing VOM emissions in excess of the plant's potential to emit.

Nothing in the bald figures provided, indicates that the plant would produce more than 18.21 tpy. If it could, the forms must indicate this. The only aspect that could change radically is startups.

Response: This comment correctly concludes that startups are the reason the plant is being permitted to emit as much as 24 tons of VOM per year. The limit of 24 tons per year VOM in the permit includes 14.7 tons VOM for startup, shutdown and malfunction and low-load operation of the turbines as indicated in the application. [Condition 10(a), Table 2D]

21. It is possible that the plant should be classified as a major source for VOM emissions. In its application, E. 89th Street states, "When considering start-up emissions, the CTG [Combustion Turbine Generator] w/duct firing, is the only emission unit with the potential to emit more than 24 tons/year." If this is the case, then the plant could conceivably emit more than 48 tpy since there are two CTGs. Automatically, the plant would be classified as a major source, and would therefore have to meet LAER.

    Response: The emission limits and operational restrictions in the permit, which is federally enforceable, restrict the VOM emissions from the proposed plant to below the major source threshold of 25 tons per year.

22. The information on number of startups per year is too vague. The application states that the plant will startup 10 times per year. These 10 startups generate 45 percent of the total VOM emissions for the plant. So many VOMs are produced in startup that if the plant started up only 3 more times per year, the plant would become a major source for VOM because it would produce more than 25 tons per year. Because startups cause so many emissions, it is imperative that the plant gives reasons for the number of startups per year.

    Response: The data in the original application (10 startups per turbine, 20 startups total) was consistent with operation of the proposed plant of base-load power plant. 89th Street has submitted additional information on startups of the turbines and associated emissions of VOM to also address operation as a cycling power plant. For this purpose, 89th Street obtained further data on startup/shutdown emission for the turbines from Siemens-Westinghouse based on the specific startup and shutdown procedures recommended for the turbines. This data shows that the plant can have up to 192 startups for the turbines per year. This is an adequate number of startups to allow for the operation of the plant. It allows for the operation of the plant even if the plant operated as a cycling plant, which would be accompanied by the greatest number of startups.

23. The draft permit does not require monitoring or measuring of VOM emission during startup of a turbine. The Illinois EPA's failure to measure emissions during startup is troubling for both VOM and PM10 emissions, because startup is the most polluting part of the whole process of running the plant. The omission of measuring these emissions highlights that every emission standard in this permit is unenforceable during startup. Enforceability is a fundamental requirement for every emission

standard and operating limit that originates from the Clean Air Act. USEPA has a longstanding policy, embodied in the Bennett Memoranda and recently underscored in the case *Michigan Dept. of Environmental Quality v. Browner*, 230 F.3d (6th Cir.), to regard emissions during startup as directly relevant to achieving NAAQS. Startup emissions cannot be excluded from permitting and enforcement activities without violating the SIP. Without measuring the startup emissions, the emission limits in the permit can never be enforced for startup periods. While there are continuous emissions monitoring for NOx and CO, neither VOM nor PM10 emissions are monitored. Given the dangers of over-emitting, it is imperative that these emissions be monitored during startup.

Response: Startup emissions are being addressed and have not been excluded from the permit. The draft permit required that all emissions be considered for purposes of determining the plant's compliance with annual emission limits [Condition 10], specified control practices that had to be followed to minimize emissions during startup [Condition 3], and included recordkeeping related to startup [Condition 17(e)]. Provisions also have been added to the permit to require testing, i.e., measurement of VOM during startup of a turbine, to confirm the design emission data provided in the application [Condition 13(a)(i)].

In addition, while VOM monitoring is not required, monitoring for CO also serves as an indicator of control and emissions of VOM. This is because both CO and VOM emissions are a result of incomplete combustion and thus CO emissions levels also generally indicate level of VOM emissions.

Finally, the concerns expressed in this comment concerning startup emissions are not applicable to PM10 emissions. PM10 emissions are generally related to the operating level of a turbine so that PM10 emissions during startup are much lower than routine operation of a turbine. PM10 emission limits set in the permit are applicable at all times including during startup, malfunctions and shutdown.

NOISE:

24. No mention was made of the noise this plant will generate. Doesn't this plant have to get a noise permit? Aren't there rules on noise pollution? We want the plant to use enclosures so that all major equipment is enclosed in permanent buildings that are designed to reduce noise affecting area residents. This should not be an "open-air" design.

    Response: 89th Street has stated that it would design and build the proposed facility to comply with Illinois' Noise Standards, which includes standards to protect against nuisance noise from stationary sources. Because noise is produced at the inlet to the turbine and the stack, buildings are not the solution to control of sound. Rather, the each point of noise generation must be appropriately enclosed, dampened or muffled to control potential noise.

    Illinois' Noise Standards are at 35 IAC, Subtitle H, available at www.ipcb.state.il.us/Title_35/main.htm.

    This permitting process cannot address noise. The conditions of the permit, as it is an air pollution control permit, highlight applicable emission standards than would

apply to the proposed facility and impose further requirements related to the facility's emissions. However, nothing in the permit excuses the proposed facility from compliance with the Board's regulations, including its noise regulations.

ADMINISTRATIVE PROCEDURES:

25. The Bush Homeowners and Tenants Association (BHTA), a community organization representing the interests of the Bush neighborhood close to the proposed plant site, with members who are primarily Mexican-American and African-Americans of lower income, feels that the information provided at the public hearing was highly technical, so as to only be intelligible and meaningful to engineers. Information was not presented in lay terms so that ordinary community residents could understand what this plant will be all about, how big it will be compared to other existing power plants located in Chicago, how much pollution it will cause, expressed in terms of how it will change our local air quality. How can we respond to this hearing or to the documents distributed unless we are power plant engineers? What is the point of a public hearing unless the information is presented in a way that we can understand and appreciate how this could affect our lives, the value of our homes, etc.?

    Response: The subject matter of air pollution control permits for major sources, like the proposed source, is highly technical. Accordingly, it is difficult to reduce permits and related documents to simple terms that both accurately address the legal requirements and the practical concerns of local residents. Also, some concerns of the public may be outside of the scope of a permit and the legal authority of the Illinois EPA. Public hearings provide a more effective way to communicate to the public. However, even at hearings, as shown by this comment, the Illinois EPA may not be as effective as we would like. It is unfortunate that more questions were not asked at the public hearing to stimulate further discussion at the hearing on the specific concerns of local residents.

    As stated at the hearing, the plant would be a major source of emission for NOx and CO. However, as the plant would burn natural gas, its emissions would be a fraction of the emissions of the existing coal-fired power plants in the Chicago area. Given the levels of emissions and their nature, local air quality should not be significantly affected by the plant.

    The affect of the plant on local property values, if any, is outside the jurisdiction of the Illinois EPA and the permitting process. Authority for land-use planning and management rests with local government, in this case, the City of Chicago. However, as noted in other comments, the location of the plant is an industrial "brown field" site that is planned for redevelopment as an industrial park. Thus, it would appear that the plant is fully consistent with land use planning for the South Shore and Calumet area, which the City of Chicago prepared to facilitate economic development while preserving and enhancing residential neighborhoods.

26. BHTA members, residents of the local community, recognize that the former U.S. Steel South Works site is slated by the City of Chicago for an industrial park, and that a new source of electric power is helpful in attracting new businesses to this site, and creating new jobs. However, the new jobs are not guaranteed, maybe they will happen, maybe not. But this permit application does represent a guarantee by the power plant's owners that the community will receive a new source of pollution and

decreased air quality. We say, if they guarantee us more pollution but no one can guarantee more jobs, then the community wants the developers to guarantee something concrete, tangible, immediate, in return for letting them create more pollution in our community and making lots of profits. We know this power plant will cost hundreds of millions of dollars to build. It is not too much to ask that the developer agree to provide certain community benefits, as reasonable cost.

Response: The purpose of this permit is to address the emissions and air quality impacts of the proposed plant. It is beyond the scope of the permitting process to address specific compensation that a proposed source will provide for the residents of nearby communities.

In addition, this comment suggests that there would be levels of air quality impacts on the nearby community from the plant that would warrant compensation. However, an underlying purpose of the air pollution control construction permit is to ensure that the impacts of the proposed plant are not at levels such that the resulting air quality would threaten public health. Accordingly, air quality impacts should never be at a level that warrants any compensation. Indeed we doubt that this comment really intended to suggest that compensation should be considered acceptable, much less accepted from a proposed plant in exchange for air quality impacts that would harm public health. Rather we believe the comment was really only asking the question whether the plant would provide any benefits directly to the local community. As already explained, that is a matter that is not covered by the permit application for the proposed plant and that the Illinois EPA does not have the authority to consider. However, it is our understanding that these matters have been discussed with local elected officials.

FUTURE COMPLIANCE:

27. How often would the Illinois EPA conduct on-site inspections of this plant? How often would the Illinois EPA inspect the service records and operator logs of this plant to ensure compliance?

    Response: A plant such as 89th Street would be inspected at least once a year. Additional inspections would be conducted on as needed basis.

28. If the SCR on a turbine fails, is the turbine allowed to operate temporarily without them, thus emitting excess emissions? Is there some limit to the amount of time a turbine can operate with the emissions control out of service or malfunctioning?

    Response: The permit requires the turbine to be promptly removed from service if there is a malfunction of the SCR. For this purpose, the plant would be allowed up to two hours to get the SCR back in service provided that the Permittee has properly maintained and operated the equipment and any malfunctions are infrequent, sudden, not caused by poor maintenance or careless operation, and in general are not reasonably preventable. This period would only be extended if the malfunction coincided with an electric power emergency, so that shutdown of the unit would endanger the regional power supply otherwise, the unit must be shut down as soon as is practicable. The measures that must be taken to be entitled to continue operation during a malfunction will serve to prevent the actual occurrence of malfunctions. They should also result in lower emission levels during normal

operation that should outweigh the excess emissions from any malfunction that would occur.

ENERGY POLICY:

29. We believe that adding wind turbines to this project is both feasible and desirable, and could provide benefits to all parties. Wind power produces zero emission. The community would be directly benefited by lower emissions if some portion of the full plant's capacity was provided by wind power, for instance 5 percent. If wind turbines were present at the proposed plant, whenever wind speeds were adequate, the wind turbines would reduce both emissions and the source's fuel costs. The addition of wind turbines would be very consistent with Illinois' and the City of Chicago's green energy initiative. Also, the developer should strongly consider placing the ownership of the wind turbines in a separate legal entity, some portion of which would be owned by a community trust so that wind entity's profits could be shared with the community. This kind of tangible benefit would go part of the way towards compensating nearby residents for the increased levels of air pollution caused by this plant. An innovative program of this type could also offer a more favorable public perception of this proposed plant and its developer.

    Response: The Illinois EPA does not have the legal authority to require that wind turbines be added to this project. In addition, development of a "utility scale" wind power plant would not be feasible at this proposed plant site given its urban character and the amount of land that is needed for a wind farm. Rural areas are targeted for development of utility scale wind power, where existing land use is agricultural and hundreds of acres are available on which to locate the wind turbines. For example, the new 50 MW Nativa wind plant near Mendota will involve 63 individual wind turbines spread out over 2600 acres of land.

FOR ADDITIONAL INFORMATION

Questions about the public hearing and permit decision should be directed as follows:

Public Hearing Procedures and Exhibits

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Responsiveness Summary

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Listing of Significant Changes between the Draft Permit and Issued Permit

Condition 4(b): Condition added for the backup diesel engine generator limiting its use to an emergency unit, to meet the internal power need of the plant.

Condition 9(a)(iii): Condition added requiring that the fuel oil used in the backup diesel engine generator be very low-sulfur oil.

Condition 9(c): Condition added requiring each turbine to not operate routinely below 65% load or such lower load at which compliance with emission limits has been demonstrated.

Condition 13(a)(i): Condition revised requiring emission testing during startup/shutdown mode of the turbine operation.

Condition 13(a)(iv): Condition added requiring testing of NOx emission from the auxiliary boilers.

Condition 16(b)(v): Condition added requiring recordkeeping for ambient temperature and turbine load.

Condition 16(d)(iv): Condition added requiring recordkeeping for low load of the turbines.

Condition 20(b): Condition revised to require reporting of information on number of startup, and low load operation with the annual emission report.

Table 2A and 2B: Hourly VOM emission limit revised to address operating across the normal load range of the turbines.

Table 2C: Separate hourly PM emission limits set for the turbines to address operation at different ambient temperatures (less than 49 ^{O}F, between 49 ^{O}F and 69 ^{O}F, and greater than 69 ^{O}F).